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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,598	07/11/2003	Dean L. Kamen	1062/D77	2911

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BROMBERG & SUNSTEIN LLP
125 SUMMER STREET
BOSTON, MA 02110-1618

EXAMINER	
SCHARICH, MARC A	

ART UNIT	PAPER NUMBER
3611	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/617,598	KAMEN ET AL.	
	Examiner	Art Unit	
	Marc A. Scharich	3611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *3/15/2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-5 and 8-20* is/are rejected.

7)☒ Claim(s) *6 and 7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

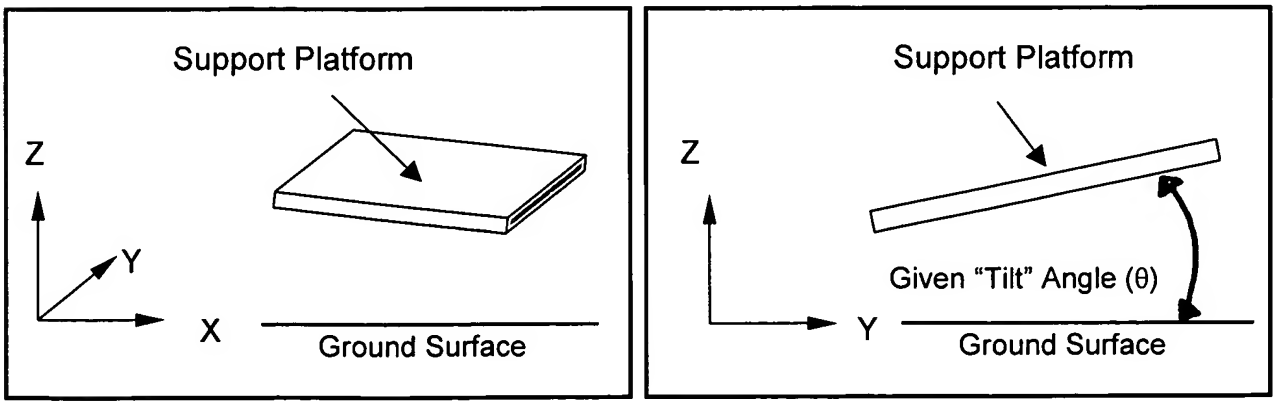
1. Applicant's arguments, see attorney's REMARKS filed 3/15/2006, with respect to the rejection of claims 1,3,4,8, and 11-20 under 35 USC § 102(b) have been fully considered and are found to be persuasive, therefore removing the grounds for rejection based on Kamen, U.S. Patent No. 5,791,425. The portion of the arguments specifically found to be persuasive by the examiner was:

"Neither sensor A nor sensor B provide a signal characterizing attitude of the support platform. Furthermore, neither of these sensors are used to provide a torque as a function of attitude based upon the signal from the sensor. For these reasons, Applicants' respectfully submit that the rejection based on sensors A and B in Kamen '425 has been overcome.".

However, upon further consideration of prior art JP 4-201793, Furukawa et al. (translated), which was previously disclosed by applicant in an Information Disclosure Statement and considered by a previous examiner, new grounds for rejection are made based on a new interpretation of the prior art by the current examiner, as discussed below in *Claim Rejections - 35 USC § 102.*

With regard to claims 5,9, and 10, previously rejected under 35 USC § 103, the examiner's position has not changed, thus still being rejected as discussed below in *Claim Rejections - 35 USC § 103.* Additionally, after further consideration by the current examiner, claims 2,6, and 7 are no longer rejected under *35 USC § 103.* Furthermore, it is noted that new grounds for rejection under 35 USC § 103 have been made for claims 8,17,and 20, as discussed below in *Claim Rejections - 35 USC § 103.*

Finally, it is important to note the examiner's interpretation of the word "attitude", and what it constitutes, in light of the applicant's previous disclosure of the invention, *so an understanding of this interpretation can be considered hereinafter in this office action.* Based on the applicant's disclosure, the examiner is interpreting "attitude" as the orientation in space (X,Y,Z coordinates) of the support platform surface "plane" relative to a *standard* "ground" surface, OR, the orientation in space (X,Y,Z coordinates) of the support platform surface "plane" relative to a second base or platform "plane" that is substantially parallel to a *standard* "ground" surface. In BOTH interpretations, it is important to also realize that the orientation or "attitude" of the support platform surface "plane", in X,Y,Z, coordinates, relative to a *standard* "ground" surface, may be quantified or described in terms of an angle or an array of angles from various points on the support platform surface "plane" because the given orientation or "attitude" of the support platform in space will always form a certain angle measuring how much the support platform is "tilting", thus various "tilt angles" may be quantified from various points on the support platform surface "plane", relative to the stationary "ground" surface, as illustrated below.



Acknowledgment of Amendment

2. The amendment from applicant, filed on 3/15/2006, has been acknowledged by the examiner, which contains an amended claim 14.

Claim Objections

3. Claim 1 is objected to because of the following informalities: In claim 1, line 6 contains "the attitude orientation", and additionally, line 8 contains "the orientation referred to as an attitude". The current claim language containing "attitude orientation" and "orientation referred to as an attitude" is ambiguous. The examiner suggests omitting the word "attitude" in line 6, leaving just the word "orientation". Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4,11-16, and 18-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Furukawa et al., Japanese Patent No. JP 4-201793 (translated).

With regard to claims 1-4,11-16, and 18-19, Furukawa et al. discloses a transporter for transporting a load over a surface (Figure 23 from JP 4-201793), the transporter comprising: a support platform [frame] (102) for supporting the load, the support platform (102) characterized by a fore-aft axis and a lateral axis; at least one ground-contacting element [wheels] (100a and 100b) coupled to the support platform (102) in such a manner that the orientation of the support platform (102) with respect to

the [ground] surface beneath and in contact with the at least one ground-contacting elements is capable of variation [The wheels 100a and 100b appear to be flexibly coupled to DC servo motors 104a and 104b in a free rotational manner that enables pivot, by means of two shafts or axles to transmit the torque from each motor to the wheels, thus the platform is able to change attitude in the fore-aft axis from pivoting and thus capable of variation based on the position of a center of mass on the support platform (102)], and a motorized drive arrangement for driving the at least one ground-contacting elements [servo motors] (104a and 104b). Additionally, Furukawa et al. discloses a sensor module for generating a signal that characterizes the attitude of the support platform (102) and a controller for commanding the motorized drive arrangement to apply a torque to one or more of the ground-contacting elements [wheels] (100a and 100b) as a function of the attitude of the support platform (102) based upon the signal generated by the sensor module. The placement of sensor module and controller are discussed in the translated JP 4-201793 specification on page 9, lines 2-4: "A box (110) is placed at a suitable position on the frame [platform] (102) and a tilting sensor and a control unit (neither of which is shown in the figure) are accommodated inside this." [thus measuring the distance between a fiducial point on the platform and a position on the surface disposed at a specified angle (angle from tilting sensor)]. Since Figure 23 is one of four practical embodiments of Furukawa's invention and Furukawa et al. discusses the sensor module operation and controller that could be used *in all embodiments*, the sensor module and controller discussed in detail *does indeed* apply to Figure 23, even though they may only be shown in other embodiments because the specification states that Figure 23 "indicates the fourth

practical embodiment of the present invention" (page 8, last paragraph) and as discussed, *does* contain a sensor module and controller.

Pages 4 and 5 discuss the sensor module and controller in more detail, shown in Figures 5-7. Referring to the first practical embodiment, Figure 1, "In addition, a box (40) is placed at an appropriate position on the frame (12) and it accommodates a tilting sensor (42) which detects the tilting relative to the z shaft inside plane surface x-z as well as the tilting speed and a control unit (44) which inputs the output for that." (page 4, lines 3-7). The controller [unit] (44) (Figure 5) is interfaced with such elements as a joystick (46) [a user interface that generates a signal to vary the attitude of the support platform], a sensor module [tilting display device] (62) that is used to check or characterize the tilt or attitude from the output signal generated by a distance [tilt angle] sensor (42) that measures an angle, thus inherently measuring a distance [distances are needed to generate angles], and a microcomputer (48) that is used to calculate drive control values. Together, with other interfaced elements, the discussed elements of the controller [unit] (44) connects with DC servo motors and commands motion of the transporter in a fore-aft plane and even in a lateral plane [as is the case in Figure 1 where the ground contacting element is a sphere]. Figures 6-7 illustrate flow charts of the subroutines of the controller [unit] (44). Ultimately, the motor torque instruction value is calculated by the controller [unit] (44) and the equations (shown on page 5) are given, which take into consideration tilting angles θx and θy, thus the controller [unit] (44) ultimately commands the motorized drive arrangement [servo motors] to apply a torque to one or more of the ground-contacting elements [wheels] (100a and 100b) *as a function of the attitude of the support platform* (102) based at least in part from the

signal generated by distance [tilt angle] sensors (42) characterized by the sensor module [tilting display device] (62).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5,9,10,17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa et al., Japanese Patent No. JP 4-201793 (translated) in view of Sugasawa, U.S. Patent No. 4,749,210.

With regard to claims 5,9,10,17, and 20, Furukawa et al. discloses what is discussed above, but fails to disclose: a transporter (including the limitations of claim 3) further including a first component that remains in a substantially fixed vertical position relative to the surface, wherein at least one distance sensor senses the distance between a fiducial point on the platform and the first component; the transporter (including the limitations of claim 1) wherein the attitude of the support platform is capable of variation based at least on a signal generated by a remote control device; the transporter (including the limitations of claim 9) further including a powered strut coupled to a platform, the powered strut capable of varying the attitude of the support platform based at least on the signal generated by the remote control device; a method (including the limitations of claim 15) wherein generating a signal includes measuring the distance between a fiducial point on the platform and a component on the

transporter that remains in a substantially fixed position relative to the surface; and a method (including the limitations of claim 14) further comprising the attitude of the support platform based at least on a signal generated by a remote control device. *Sugasawa, however,* discloses a transporter [vehicle] having a first component [axle] that remains in a substantially fixed vertical position relative to the surface, wherein an at least one distance sensor (202) senses the distance [relative displacement] between a fiducial point on the platform [vehicle body] and the first component [axle], (column 8, lines 48-62), and wherein the attitude [body roll] [body roll is defined as the *leaning or tipping* of a vehicle's body to one side or the other when turning or maneuvering, *thus is attitude*] of the support platform [vehicle body] is capable of variation based at least on a signal generated by a remote control device (170) [mode selector, which remotely controls the suspension characteristics, such as body roll], (column 27, lines 50-60) and the vehicle including a powered strut (10) coupled to the platform [vehicle body], the powered strut (10) capable of varying the attitude of the support platform [vehicle body], based at least on the signal generated by the remote control device [mode selector] (170), to provide a suspension control system that allows adjustment of suspension characteristics or suspension control characteristics [i.e. body roll] to more precisely fit the individual driver's feeling or comfort level. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the transporter disclosed in JP 4-201793 to include a first component that remains in a substantially fixed vertical position relative to the surface, wherein an at least one distance sensor senses the distance between a fiducial point on the platform and the first component, and wherein the attitude of the support platform is capable of variation based at least on

a signal generated by a remote control device, the vehicle including a powered strut coupled to the platform, the powered strut capable of varying the attitude of the support platform based at least on the signal generated by the remote control device, as taught by Sugasawa, to provide a suspension control system that allows adjustment of suspension characteristics or suspension control characteristics *to more precisely fit the individual driver's feeling or comfort level.*

Additionally, claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Furukawa et al., Japanese Patent No. JP 4-201793 (translated) in view of Kishi, U.S. Patent No. 4,722,547. Furukawa et al. discloses what is discussed above, but fails to disclose: a transporter (including the limitations of claim 3) wherein the distance sensor is selected from the group of distance sensors consisting of an ultrasonic distance sensor, an acoustic distance sensor, a radar distance sensor, a contact sensor, and an optical distance sensor. *Kishi, however,* discloses an ultrasonic sensor system suitable for monitoring movement of a transporter [vehicle] relative to the horizontal, and employs two or more coordinated ultra-sonic sensors. Each sensor broadcasts ultrasonic waves and receives ultrasonic waves reflected by the road surface. These sensors, ultimately, monitor rolling, and/or pitching motion of the vehicle body relative to a horizontal, thus as previously discussed, *body roll is considered attitude by definition.* Additionally, it is well known in the art that various types of sensors may be used to monitor various displacements, such as the distance from a base or body to a surface underneath. Furthermore, it is also well known that some sensors are "contact" sensors, such as whisker sensors, and others, such as ultrasonic sensors, do not physically contact the surface underneath. In many cases, it is

beneficial to use sensors that do not contact the surface underneath a base or body so that damage to the sensor from a foreign object would be unlikely, as opposed to a contact sensor. Furthermore yet, ultrasonic sensors are well known for the potential of monitoring distances with exceptional accuracy. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize an ultrasonic sensor for monitoring a distance from a base or platform to a surface underneath for the benefits of accuracy and the unlikelihood of damage from a foreign object.

Allowable Subject Matter

6. Claims 6 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc A. Scharich whose telephone number is (571) 272-3244. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley Morris can be reached on (571) 272-6651. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

M.A.S. 5/10/2006

Marc A Scharich
Examiner
Art Unit 3611

LESLEY D. MORRIS
PATENT EXAMINER
TECHNOLOGY CENTER 3600